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JUL 25 1997

Mr. Douglas R. Sherwood
Hanford Project Manager
U.S. Environmental Protection Agency
712 Swift Boulevard, Suit 5
Richland, Washington 99352-0539

Dear Mr. Sherwood:

TRANSMITTAL OF COMMENT RESPONSES ON THE REMEDIAL DESIGN REPORT (RDR) FOR THE 233-S PLUTONIUM CONCENTRATION FACILITY

47245

Attached are the responses to comments from Ms. P. S. Innis, U.S. Environmental Protection Agency in a letter to the U.S. Department of Energy, Richland Operations Office, "Remedial Design Report for the 233-S Plutonium Concentration Facility," dated April 10, 1997. An electronic version of the responses had been discussed with Ms. Innis on May 19, 1997. Also, attached is an air monitoring plan which will be added as a new appendix (K) to the RDR.

If you have any questions, please contact me on 376-7121.

Sincerely,

J. M. Bruggeman, Project Manager
Decontamination and Decommissioning Project

DDP:JMB

Attachments

cc w/attachs:
P. S. Innis, EPA
D. N. Mackenzie, EM-442

cc w/o attachs:
A. B. Chaloupka, BHI

Attachment 1

INTRODUCTION

The U.S. Environmental Protection Agency (EPA) and their contractor, Gannett Fleming, Inc., have completed the review of the *Remedial Design Report (RDR) for the 233-S Plutonium Concentration Facility (DOE/RL-97-08)*, dated February 1997. The primary focus of this review was to determine whether applicable or relevant and appropriate requirements (ARARs) specified in the *Action Memorandum for the 233-S Plutonium Concentration Facility (April 1997)* are satisfied.

GENERAL COMMENTS

1. Although this document states that ARARs from the Code of Federal Regulations (CFR), sections 10 (Energy) and 40 (Environment), and from the Washington Administrative Code (WAC), Section 173, are used, the requirements of these ARARs and the detail on how compliance will be achieved are not clearly stated. In contrast, the regulations specified by the Department of Transportation (DOT) (49 CFR) are very detailed in this report, as is the process for implementing these requirements. The substantive ARARs should be listed for the action and anticipated waste streams and the steps taken to demonstrate compliance with the ARAR specified in the Action Memorandum.

Response: The substantive ARARs are addressed throughout the entire text of the RDR, including appendices, by identifying specific work controls, monitoring, packaging, waste designation, etc. A thorough search will be conducted throughout the RDR and appendices to add references to ARARs as appropriate or to add any steps taken to meet ARARs if any specific information was inadvertently missed. Specific DOE requirements (TBCs) and regulations 10 CFRs will be identified in the design basis and Safety and Health section. Citations will provide specific detail defining the applicable sections or subsections.

2. In order to clarify the waste stream types and disposal options, a table or flowchart should outline the following items for each anticipated waste stream: (1) designation as TRU, LLW, low-level mixed, hazardous only, or inert; (2) physical form; (3) anticipated volumes; (4) anticipated contaminants; (5) packaging and/or special handling requirements, if known; (6) a preferred disposal site. Waste stream types should include concrete, hardware, asbestos, piping, ductwork, soils, sediments/sludges, liquids, soft waste (PPE, plastic sheeting, etc.)

Response: Document revised to include waste type volumes table and text discussion.

3. This document states that as each item is removed from the structure, it will be checked for radiation using nondestructive analyses (NDA). For the most part, this will serve to segregate the waste stream into transuranic (TRU) waste, low level waste (LLW), and non-radioactive (or at least nonregulated radioactive) waste. Additional analyses will

have to be conducted to determine the proper disposal for each of these waste streams, possibly including a more accurate check for radiation if the initial NDA results are uncertain. Specific additional information, which should be listed in Appendix E, includes the analyses required to determine whether or not the waste contains listed hazardous waste. The analyses are needed to determine whether storage and disposal facility criteria are met should be stated. Sampling for RCRA listed hazardous waste is not proposed, since the listed waste designation is a source based determination.

Response: NDA of items removed requires a very accurate assay method in order to meet WIPP criteria. The hazardous waste designation will be provided through detailed sampling based on the EPA approved Sampling and Analysis Plan (SAP) for each future activity.

4. The quality assurance program plan (QAPP) does not include either a SAP, or a quality assurance project plan (QAPjP). A SAP should state what samples will be collected, and what analyses will be done on these samples. A QAPP states how analytical quality such as precision, accuracy, representativeness, completeness, and comparability will be maintained. A schedule for the submittal of the SAP(s) and QAPjP for the removal action shall be provided, with acknowledgment that EPA shall approve these documents prior to their implementation.

Response: The QAPP is not intended to include the SAP. SAPs will be prepared separately and issued to EPA approval, which will include a QAPjP per BHI procedures.

SPECIFIC COMMENTS

1. **Section 1.0, pages 1 and 2.** The introduction section should provide a discussion of the Action Memorandum signed by EPA and DOE for this removal action.

Response: The summary of the Action Memorandum is in Section 1.2.

2. **Section 1.1, page 3, first paragraph.** The text states that the document was prepared in accordance with Section 7.3.9, 7.3.10, and 11.4 of the TPA. These references are inappropriate for a removal action. The appropriate reference is Section 7.2.4.

Response: Section 7.2.4 of the TPA will be added as a reference in addition to TPA sections 7.3.9, 7.3.10, and 11.4. The document was prepared in accordance with the referenced sections of the TPA. Such sections were utilized as a basis for preparation of the design report. The requirements stipulated in the TPA for remedial design reports were accessed since there is no existing regulatory or TPA requirement for preparation of a "Remedial Design Report" or similar design report. Given the information provided by this response, it made technical and regulatory sense to utilize an existing process as a basis for development of the RDR for disposition of the 233-S Facility. If section 7.2.4 of the TPA was the only process guiding the

planning phase of activities associated with 233-S, an RDR would not have been prepared.

3. **Section 2.1.1, page 5.** This section identifies several "special needs", but does not provided detail necessary for their development. Provided an estimated time line for the development of these needs and criteria to be followed in the design of each.

Response: These special needs will not impact the overall schedule and further details are not within the scope of the RDR. General design criteria will be applied.

4. **Section 2.1.3, page 7, first paragraph.** The time line for the development of the "engineering studies" used to manage the uncertainties of the removal action should be provided. General assumptions or contingency plans for many of the bulleted items must be developed prior to implementation of the removal action.

Response: A schedule line item for project management, project controls, and field support has been identified based on current information. The RDR intent is to identify uncertainties to be managed and addressed as work progresses and information becomes available.

5. **Section 2.1.3, page 7, last paragraph.** See General Comment 4.

Response: Document was revised to emphasize the SAP issue.

6. **Section 2.1.4, page 7, second paragraph.** It is unclear from the provided information as to whether an evaluation of decontamination alternatives has been completed. Reference the studies completed or explain the process for evaluation.

Response: This section was revised to reference aggressive decontamination technology. However, the evaluation of the applicable decontamination alternative will be performed when the contamination type and level are known following all previous decommissioning activities of equipment removal.

7. **Section 2.1.5, page 8, last paragraph.** It is unclear from the provided information which decision document shall provide the analysis and determination of the preventive measures to be implemented for control of radiological releases.

Response: The RDR is the document which provides analysis and determination of the preventive measures to control radiological releases. Based on the comment provided, additional details are provided in the engineering design basis, Section 3.0 of the RDR, and the details will be provided in specific work packages. These documents identify specific radiological controls and/or basis for the establishment of such controls.

8. **Section 2.1.6, page 8, second paragraph.** The information provided fails to acknowledge that improper disposal may occur as a result of mispackaging or incomplete

characterization. The text should also acknowledge that process knowledge may be used to provide additional information.

Response: A statement was added that acknowledges process knowledge.

9. **Section 2.1.7, page 9, first paragraph.** The determination to proceed or stop excavation of contaminated soils shall be agreed to by EPA and DOE.

Response: The determination to proceed or stop with excavation of contaminated soils will be made by RL in consultation with EPA. The ultimate decision will be based on cost efficiency. At a minimum, the contaminated area will be stabilized in a manner not to hinder any future remedial action and in a manner that will protect human health and the environment. Section V. A. 1. d. of the Action Memorandum states that "Contaminated and uncontaminated soil from a distance of 1m (3ft.) from the walls and floors of the structure will be moved or removed as necessary to implement the removal action for the structures; however the scope of this removal action does not include soil, groundwater, or waste site remediation. Further soil remediation and or capping would be conducted, as necessary, in coordination with remedial actions taken to address the operable unit". Simply stated, RL will remediate soils if the extent of contamination is minimal and if it can be removed in a cost efficient manner utilizing existing equipment and manpower mobilized for disposition of the 233-S Facility

10. **Section 2.1.7, page 9, second paragraph.** This paragraph states that the characterization efforts will be done according to regulatory guides. The text should reference specific guides to be used. Additionally, it should be noted that a sampling plan shall be submitted to EPA for approval.

Response: Incorporated statement pertaining to a SAP and EPA approval.

11. **Section 2.2, page 10.** Hazardous and asbestos containing materials are noted as being present in the 233-S Facility, many of which require treatment prior to disposal. An initial evaluation of treatment options for these materials should be presented within the design report.

Response: No treatment of any hazardous substances is anticipated at this time. No free liquids or any concentration of hazardous waste above land disposal restrictions is anticipated. If such assumptions change as more information becomes available (i.e., after characterization activities are completed) and treatment is expected, the details of such treatment will be coordinated with EPA prior to implementation.

12. **Section 2.2.1, page 11, fifth paragraph.** The last sentence of this paragraph implies that additional plans will be developed to determine disposal alternatives. The waste management plan (Appendix E) should specify disposal alternatives for the waste types generated during this action.

Response: Disposal options will be added to the waste management plan.

13. **Section 2.3.1.2, page 13.** This section discusses building ventilation. It should be noted within the design report that the NOC submitted to and approved by the Washington Department of Health is no longer valid, and that an air monitoring plan shall be developed as part of the design for this action. This air monitoring plan shall be submitted to EPA for review and approval. Washington State Department of Health will provide consultation for the review of this plan.

Response: Although the NOC is no longer valid due to schedule delays in implementation of 233-S decommissioning activities, the information and assumptions provided in the NOC have not changed in a manner that would change the status of BARCT and/or monitoring frequency air emissions. BARCT is provided by HEPA filtered ventilation, misting and fixation of radionuclide contaminants. The original NOC was conservative in nature regarding inventory of radionuclides. Current assumptions show less radionuclide inventory, however periodic confirmatory measurements are still proposed based on the level of emissions during decontamination activities. Additionally, even though the 233-S stack will be considered a "minor stack", continuous sampling of all emission points will occur to meet the requirements of DOE 6430.1A. Analysis of emission samples will occur on a confirmatory basis and during any upset conditions.

The second paragraph of this section states that a continuous air monitor (CAM) stack alarm will annunciate upon detection of radioactive concentrations requiring emergency response. The text also states that the alarm will be set at the site alert criteria (100 mrem at 100 meters). The location of this alarm is not specified, therefore it is not clear how it will be used to initiate response actions. Also, the text should state how this will correlate to the National Emissions Standard for Hazardous Air Pollutants (NESHAPs) of no greater than 10 mrem per year to any member of the public.

Response: The stack CAM is to be set at a threshold that would initiate a emergency preparedness response consistent with RL site criteria. The analysis demonstrates that the worst case accident release is less then the criteria for site alert. However, for safety reasons and because of an uncertainty that is associated with inventory, it is prudent to provide equipment to verify the absence of an event or, if the unpredictable does occur then, to alert personnel to initiate appropriate response actions.

Regarding the 10 mrem/yr criteria, accident releases are not anticipated to occur as a basis of annual or normal emissions. Only upsets that are likely or are assumed to occur during the operating period and normal process discharges are included in the 10 mrem/yr criteria. Accident releases are after the fact response, reporting, notifications issues not subject to annual dose estimates for normal or anticipated emissions.

The third paragraph notes that the stack sampling and monitoring are for normal

operations. The D&D work will not, however, be normal operations. It is suggested that the inventory data be used to estimate doses from the D&D operations and demonstrate the need (or lack of need) for continuous monitoring under 40 CFR 61. Methods for doing this are described in the regulations.

Response: The third paragraph addresses the requirements for normal emissions. The context is that the basis for expected emission during the dismantlement of the facility is less than 0.1 mrem/yr (0.0083 mrem/yr at 12.5k, site boundary). Since the requirements or 40 CFR 61 are applicable to normal or anticipated releases and the analysis demonstrates that the maximum anticipated release is less than the criteria, then the requirements for continuous monitoring are not applicable. However, because of potential accidents in the building, monitoring of the exhaust stack is a prudent indicator for emergency response action.

14. **Section 4.1, page 28.** The text states that, according to NESHAPs, if the potential offsite dose is less than 0.1 mrem/year, then only periodic confirmatory measurements (PCM) are required. The text should define whether "offsite" means outside the 233-S boundary, outside the 200 Area, or outside the Hanford Reservation boundary. Also, 40 CFR 61.93 (b) states that periodic measurements (as opposed to continuous measurements) for radionuclides may be used only with EPA's prior approval. (See comment 13.) Additionally, the PCM will consist of sampling for total alpha/beta only. PCM for gamma radiation should also be conducted.

Response: Incorporated statement on boundary.

15. **Section 4.2.1, page 29.** The wastes stream categories, noted in the first sentence on this page, should be defined. See General Comment 2.

Response: Incorporated reference to Appendix E.

16. **Section 4.2.2, page 29.** Specific waste handling information should be provided for asbestos containing material (ACM), smearable material, etc.

Waste packaging requirements for ACM shall comply with NESHAPS.

Labeling/placarding requirements shall comply with DOT regulations for hazardous as well as radioactive materials.

Response: Specific waste information will be provided in the site specific waste management instructions (SSWMI).

17. **Section 4.2.3, page 29.** The specific DOT and EPA regulations shall be specified.

Response: Reference to Appendix E added.

18. **Section 4.2.4, page 29.** The preferred alternative for liquids is treatment to render them non-hazardous (e.g., treatment at ETF). Liquids will be solidified on a case by case basis with prior approval from EPA.

Response: Incorporated statement.

19. **Section 4.3.1, page 30, sixth sentence.** The sampling plans for this action shall be approved by EPA prior to implementation.

Response: Incorporated statement of approval.

20. **Section 4.3.2, page 31.** If "in-process sampling" or NDA are use for designation of waste, EPA must approve the plan for implementation of these methods.

Response: Incorporated statement providing for EPA approval of characterization technologies.

21. **Section 4.3.3, page 31.** The "final status" characterization plan shall be submitted to EPA for review and approval. Additionally, it is unclear what "site release criteria" are referenced. At this time no specific land use has been determined for the 200 Area. Sampling shall be performed to determine the extent of contamination left in place. Cleanup criteria shall be established in the operable unit ROD. Finally, the sampling and analysis plan shall also consider a *Methods for evaluation the attainment of cleanup standards - Volume 1: Soils and Solid Media, EPA 230/02-89-042* and Ecology's *Guidance on Sampling and Data Analysis Methods, Pub. No. 49-49.*

Response: Incorporated statement that the site release criteria will be established in the operable unit ROD for the 200 Areas.

22. **Section 5.3, page 34.** Section 9.3 of the TPA does not specifically apply to removal actions taken under CERCLA. The actions to be taken for changes specified in this section shall be deleted. EPA and DOE management shall come to agreement on the level of documentation need for changes to an Action Memorandum or the Design Report.

Response: Section 9.3 of the TPA is an important part of the 233-S initiative to utilize CERCLA and TPA administrative change control processes. The process provided by CERCLA and the TPA are based on protection of human health and the environment and are far more efficient and streamlined than the process established for safety engineering controls (TSRs, OSRs, etc.). The whole basis of the ER initiative relies on CERCLA and the TPA to provide the technical information used for the DOE Safety Authorization Basis. The 233-S project must rely on CERCLA and TPA change control in order to avoid time consuming and costly preparation of DOE safety documents such as Safety Analysis Reports.

23. **Section 5.4, page 35.** No reference is made to the requirement that decommissioning workers must complete HAZWOPER training.

Response: Added training statement and changed the training matrix Table 5-1.

24. **Section 5.7, page 37.** This section, which discusses project closeout, states that further remedial action will be conducted if soils three feet below grade are found to exceed either 15 mrem/year or hazardous substance soil cleanup levels as stated in WAC 173-340-745 for industrial sites. No cleanup criteria have been established for the 200 Area at this time. Sampling will be done to determine the level of contamination left in place although may be used at during operable unit cleanup. Prior to closeout, EPA and DOE shall come to agreement that the removal action is complete.

    Delete the last paragraph of this section, as it does not apply to this action.

Response: Deleted both the 15 mrem/year and the last paragraph. Added EPA and DOE agreement of removal action prior to project close-out.

25. **Appendix B, Section B2.2.1, page B-3.** Justification should be provided for not decontaminating equipment to free release levels. Additionally, material should be sorted with respect to hazardous substances, also (e.g., mixed TRU, mixed LLW, hazardous only). Additionally, no discussion is made of a processing area for asbestos containing material.

Response: Revised document to address these concerns.

26. **Appendix B, Section B2.3, page B-5.** It is not clear, from the information provided, if the pipes from the chemical makeup tank and the tank itself are not contaminated. Provide information that clarifies this.

Response: Revised document.

27. **Appendix B, Section B2.5, page B-7.** EPA must make an off-site determination on facilities used for storage or disposal of waste generated during this action, other than ERDF.

Response: Incorporated EPA approval.

28. **Appendix B, Section B2.8.4, page B-13, sixth sentence.** The criteria for determining when "aggressive decontamination methods" are required should be established within the design document. Additionally, the criteria established for determining if decontamination is "too expensive" should be established in a cost benefit analysis and

should include life cycle costs for that material.

Response: This discussion is intended to identify the various options for decontamination work. The alternatives are already considered in the overall project cost. The waste acceptance criteria will determine the level of decontamination effort necessary to comply with waste minimization.

29. **Appendix B, Section B2.10, page B-14.** No mention of CO_2 Pellet Blasting as a method for decontamination is given. This technology should be considered as no secondary waste stream is generated. Consideration should be given to this technology in coordination with the Technology Deployment Initiative. Several proposals for CO_2 decontamination are being considered in the STCG mixed waste subgroup.

Response: This process does generate secondary wastes. Recent application at Hanford (222-S) with alpha contamination proved that much greater emphasis is needed to collect the off-gases.

30. **Appendix B, Section B2.11, page B-15, third sentence.** The "established guideline values and conditions" should be reference or provided within the text.

Response: Incorporated reference.

31. **Appendix B, Section B2.14.1, page B-18, last paragraph.** The first sentence in the last paragraph notes that the soils in the pipe trench will be sampled for radiological contamination only. Justification should be provided for not sampling for hazardous substances, otherwise, it should be included within the action. Additionally, the second sentence notes that soil above "permissible levels" will be prepared for disposal. These levels should be defined.

Response: Incorporated acknowledgment and referenced permissible levels.

32. **Appendix B, Section B2.15, page B-19, last paragraph.** This paragraph implies that after decontamination of the facility, a reevaluation will take place to determine if continued S&M should occur. Please clarify the intent of this paragraph.

Response: This paragraph was deleted.

33. **Appendix B, Section B2.22, page B-21.** See comment 21.

Response: Incorporated comment of cleanup criteria.

34. **Appendix C, Section 9, page C-17.** The IDLH levels given are consistent with the outdated June 1990 NIOSH criteria. The IDLH levels should be updated to be consistent with the 1994 NIOSH criteria.

Response: Incorporated.

35. **Appendix C, Section 13, page C-21.** The 10 ppm action level is not justified. Assuming that the action level is taken from the IDLH levels for organics, the new action level should be 8 ppm.

Response: Incorporated.

36. **Appendix D.** The plan scope is limited to the "nuclear" portion of the 233-S Facility D&D. The proposed reviews, surveillance, tests, and inspections are appropriate for this project. Work packages and procedure review and worker training surveillance are indicated, but the Quality Plan actions should ensure that all required criticality and radiological safety actions are adequately presented in the procedures and worker training. Will worker training involve intensive practical and mockup experience for the sensitive aspects of the D&D project?

Response: Review of work packages shall be performed per Quality Program review list Attachment 1. Intensive practical and mockup experience for sensitive aspects of D&D will be included in training.

37. **Appendix E, Section E1.0, page E-1, first paragraph.** The management and disposal of the waste generated shall be done in accordance with the ARAR specified in the Action Memorandum for the 233-S Facility and not the EE/CA and comply with the disposal facility waste acceptance criteria. No waivers have been sought for this action.

Response: Deleted reference to EE/CA and incorporated statement of reference to the Action Memorandum.

38. **Appendix E, Section E1.0, page E-1, seventh paragraph.** Revisions to the waste management plan shall be approved by DOE and EPA.

Response: Incorporated

39. **Appendix E, Section E2.0, page E-2.** See General Comment 2. Additionally, prior to shipment of any waste to CWC, EPA shall make an off site determination for that facility. Also, waste can be stored at CWC, not disposed of there.

Response: Revised the CWC disposal reference to store and incorporate EPA approval statement.

40. **Appendix E, Section E2.2, page E-2.** This section states that "purely hazardous" waste may result from operations as part of this D&D. Specific examples of the waste should be provided. The text also states that this "regulated waste" will be containerized, then shipped directly offsite to "appropriate disposal sites." It is assumed that the waste

referred to in this section is below regulatory radioactive levels, but that a hazardous component is present. The text should state the ARARs used to determine whether or not this waste is hazardous, the analytical methods used to make this determination, and specific disposal options. The option of "appropriate disposal sites" is not clear, and specific landfill options should be stated. If the waste can be treated to satisfy ERDF waste acceptance criteria, onsite disposal is the preferred option. It is required the EPA make an off-site determination for any disposal option other than ERDF.

Response: Document revised, examples of waste provided. Regulated waste will be handled per RCRA.

41. **Appendix E, Section E2.4, page E-3.** The first paragraph states that waste will be treated for "waste form acceptance". The specific standard to which the waste will be treated should be given.

The second sentence in the second paragraph is incomplete. Additionally, it is required that EPA make an off-site determination for any disposal option other than ERDF.

Response: Deleted the statement addressing treatment. TRU waste will be packaged in accordance with WHC-EP-0063.

42. **Appendix E, Section E2.6, page E-3.** This section discusses demolition wastes, and states that these wastes will be disposed of at Bechtel-Hanford, Inc. (BHI)-managed waste landfills. Acceptance criteria for these landfills should be summarized. Also, justification is unclear for shipment and disposal in the 100 Area of waste generated in the 200 Area.

The last statement in this section is "All asbestos, creosote, chemically-treated wood, gypsum, sheet rock, etc., will not be considered nonregulated wastes." Does this double-negative mean that these items ARE considered REGULATED waste? Also, the disposal options for these waste should be given.

Response: The document will be revised to include a reference to BHI-EE-10, Waste Management Procedures, which identify demolition landfill requirements. WAC 173-304-100 will also be added as a reference.

43. **Appendix E, Section E3.0, page E-4.** It is recommended that a waste profile be developed for each waste stream anticipated during the removal action.

Response: Incorporated waste table and information base statement.

44. **Appendix E, Section E5.0, pages E-4 and E-5.** This section should include a discussion of decontamination and recycling alternatives that may be applied for waste minimization

as well as reference for the evaluation of these alternatives.

A discussion of source reduction for waste minimization should be given. This may include substitution of nonhazardous alternatives when available and discrete use of hazardous material for their intended purpose only.

The third paragraph states that hazardous waste will be shipped off site. Justification must be provided for not utilizing the ERDF facility for disposal of this waste. Additionally, if the waste must be shipped off site, EPA must make an offsite determination of the potential TSD facility.

Response: Incorporated a waste minimization statement.

45. **Appendix E, Section E6.0, page E-5.** See General Comment 2.

Response: Document revised to include waste type volumes table and text discussion.

46. **Appendix E, Sections E6.2 through E6.5.** The information provided in these sections appears to be in the detail more specific to work instructions or procedures rather than a design document.

The designation of gallons seems more appropriate for liquids rather than the type of material anticipated from D&D operations. It would appear that tons or cubic feet/yards would be a more appropriate scale of measurement

Response: Revised to include solid bulk units.

47. **Appendix E, Section E6.7, page E-9.** Waste transportation methods for sites other than ERDF is not clearly identified.

Response: Incorporated phrase for other sites.

48. **Appendix E, Section E6.8, page E-10.** Waste storage areas should be proposed for approval within the waste management plan. Additionally, the text should be changed to show that hazardous waste may be disposed of at ERDF or shipped off site after EPA makes an off site determination for that facility.

Response: Incorporated statement.

49. **Appendix E, Section E7.0, pages E-10 and E-11.** The acceptance criteria for ERDF are not appropriately quoted in the section. It is recommended that the acceptance criteria for the storage and disposal facilities mentioned in this document be reference only and not paraphrased. Additionally, it is recommended that Table E1 be deleted and the ERDF

WAC referenced.

Response: The ERDF WAC Table E1 was deleted.

50. **Appendix G.** The criticality safety analysis methodology is based on accepted methods and techniques. The nondestructive analysis methods, results, error estimates, and overall evaluation were complete. The plutonium inventory determined to remain in the system components is reliable and satisfactory to support the criticality safety calculations and evaluations, and the D&D project planning.

The D&D operations will result in configuration changes and possible material redistribution. These factors and concerns were adequately addressed in the report and appropriate actions were suggested to ensure a conservative criticality safety margin is maintained during D&D. It is important that the D&D work procedures and NDA plans adhere to the controls and limitations outlined in this report.

Response: No response needed.

51. **Appendix H.** The hazard analysis was complete in that it covered significant possibilities, and, in general, the assigned classification and likelihood were appropriate. Changes to consider are given below.

> Page H-14, for electrical shorts caused by water intrusion into the building. Category II may be more appropriate than Category IV (minor, non-life threatening injury or exposure). Electrical shocks may even be fatal (Category I).

Response: The purpose of this iteration of the hazard analysis is to define release and exposure potential. The hazard identification and evaluation in the EE/CA is used to identify industrial and construction related hazards. This iteration is to confirm the protective requirements and to confirm the release hazards that need supporting accident analysis. The accident analysis provides the technical basis to define the necessary controls (preventative or mitigative) for low probability and high consequence accidents. Industrial and construction hazard controls are addressed in section 3.3, 3.4 and 3.5 of the RDR. This clarification will be added to Appendix H.

> In general, the accident analysis sections addresses the principal concerns, and the analysis methodology and dose calculations are based on accepted methods and techniques. The results are reasonable considering the source terms, environmental conditions, and accident scenarios. Changes to be considered are given below.
>
> > Appendix H, pages H-43/44, -49/50, and -57. These pages discuss air modeling for three different scenarios. Scenario 1 is a fire in the process cell; scenario 2 is an accidental drop of the pressure vessel; and scenario 3 is an accidental drop of

the pipe trench cover block. Various assumptions were used for all three scenarios, including an elevated stack release with and without HEPA filtration, and a ground level, unfiltered release. In all cases, the conclusion is that, for an elevated stack release with no HEPA filtration, an insignificant dose is observed at 100 meters. It appears that the site alert criteria of 100 mrem (0.1 rem) are used. However, in all scenarios, the ground level release dose exceeds the 0.1 site alert criteria at distances of 100 and 300 meters. Also, at scenario 2, the site alert criteria are exceeded at 600 meters for the elevated stack release with no HEPA filtration. The text should justify assuming an elevated stack release (versus a ground level release) for all scenarios, and the HEPA filtration assumption for scenarios 1 and 2.

The comment cites "pressure vessel". The following response assumes this refers to the process piping and vessels none of which are pressurized.

The comment conclusion that "In all cases, the conclusion is that, for an elevated stack release with no HEPA filtration, an insignificant dose is observed at 100 meters. It appears that the site alert criteria of 100 mrem (0.1 rem) are used." is inaccurate. As stated in Section 3.1, the onsite doses consequences are compared to the alert level (the lower threshold). The comparison of the Maximum Exposed Individual (MEI) is used in the comparison of the alert criteria. This is a correct method to compare elevated releases with the dose criteria when the criteria model assumes a ground level release. The objective of the EP alert criteria is to define if an onsite release has the potential to exceed 100 mrem. From scenario one, there is a remote chance of a fire in the process hood that could cause filtration failure and result in an instantaneous release. The upper bound estimate (worst case) of dose consequence is 54 mrem which is less than the site alert criteria of 100 mrem. It appears that the comment draws conclusions from the attachments (pages H39 -H50) instead of the documented conclusions in Section H3.2.

Regarding the comment pertaining to scenario 2, process vessel drop, "Also, at scenario 2, the site alert criteria are exceeded at 600 meters for the elevated stack release with no HEPA filtration. The text should justify assuming an elevated stack release (versus a ground level release) for all scenarios, and the HEPA filtration assumption for scenarios 1 and 2." the comment cites incorrect sections. The appropriate section is found in H3.2.2. There is no credible operation or activity related accident initiator that would result in the destruction of the stack or other structural confines. No further justification is warranted.

Also, NESHAPs specifies an annual dose of 10 mrem per year or 0.01 rem per year to the general public; above this level is not acceptable. For all three scenarios, the dose at 100 meters is less than the dose at further distances. For scenario 2 (elevated stack, no HEPA filtration), the doses at 0.3, 0.6, and 3.3 kilometers all exceed NESHAPs (Table 2, page H-48). Also for scenario 2 (ground level release), the doses at 0.1, 0.3 and 3.3 kilometers exceed NESHAPs (Table 4, page H-49). For scenario 3 (ground level release), the doses at 0.1, 0.3,

and 3.3 kilometers all exceed NESHAPs (Table 2, page H-56). The applicability of NESHAPs should be determined.

Refer to the above discussions. Components of release, due to accident scenarios, are not accounted in anticipated or normal emission estimates because they address different criteria and different control functions. Both need to be considered, but because of different drivers and different resulting commitments however, normal release NESHAPS and accident release for determination of DOE equipment classes and emergency response are different.

Appendix H, pages H-52 and H-60. These pages show air model input and results. Two input parameters should be examined and possibly changed. First, no deposition velocity is assumed, although the contaminant being modeled is plutonium, a very dense element. Plutonium would be expected to settle out (deposit) fairly quickly, given its density. This could result in much higher doses closer to the scenarios modeled, possibly at the 100 meter range. This could affect the results for the site alert criteria. Second, a receptor height of 0 meters is assumed, although a receptor height of 2 meters is more commonly used in air modeling. Two meters is used because it is assumed to represent the breathing zone for most adults. Using 0 meters could result in incrementally increased doses for the scenarios being modeled. Either the text should support why these two potentially nonconservative parameters were used, or the models should be changed.

Regarding practical deposition, the recommended practices for nuclear accident analysis is to exclude deposition for accident analysis. This variable with the other variable provides a consistent basis which ensure bounding potential consequences consistent with DOE or NRC accident analysis criteria. The application of the cited release scenario is to determine which of the neighboring laboratories and waste management units could potentially be impacted by an accident. And since the ARF/RF variables account for (upper bound) respirable particulate the assumption is appropriate to exclude deposition unless there is specific data to define a deposition rate.

Regarding receptor height, when the objective is to define the MEI, there is no significance to receptor dose including assuming worst case meteorology. Therefore, the default setting, 0, is used.

Attachment 2

(NEW APPENDIX)

CONTENTS

FIGURES

K1.0 INTRODUCTION

This air monitoring plan establishes the method of controlling emissions and provides the proposed requirements for effluent monitoring during the 233-S Facility decommissioning activities. These activities include the following:

- facility modification for decommissioning,
- facility decontamination and equipment removal,
- facility removal, and
- site stabilization.

The 233-S Facility was built in 1955 and concentrated fissile material from the 202-S Reduction Oxidation (REDOX) Facility. The facility has support areas and a control room for the non-process and process areas. All exterior doors on the facility have airlocks for contamination control. In 1963, a fire in the process areas contaminated the facility which required constructing the 233-SA Exhaust Filter Building for continued operation until the plant was retired.

K1.1 Planned Activities

The decommissioning project will utilize the existing high efficiency particulate air (HEPA) filter 233-SA Filter Building ventilation system during interior work. Commercial portable HEPA filtered exhausters will be used for local capture of particulates with exhaust treated by the facility's ventilation system. For exterior decommissioning work that requires ventilation, a Portable/Temporary Radioactive Airborne Emission Unit (PTRAEU) will be used to provide HEPA filter exhaust. The existing 233-SA stacks are registered with the State of Washington Department of Health (DOH) as Stack Number 296-S-7W/7E. The PTRAEU that will be used is registered as 296-P-35 and is a skid mounted 3,000 cfm, 6,000 cfm, 9000 cfm variable flow rate stack with double HEPA filters, sampler, and monitor.

A complete discussion of work sequence can be found in Appendix B. In summary, decommissioning will begin by removing or fixing removable contamination prior to removal of equipment. The interior surfaces of the facility will be decontaminated for construction of airlocks for worker access to the higher contaminated areas. Work will be performed inside enclosures with the use of water misting to reduce the potential spread of airborne contamination to the exhaust system or previously cleaned areas.

The items will be removed starting with the greatest contamination in order to reduce the overall inventory at risk. Equipment removal and work activities will be limited to individual items or areas to reduce the risk of cross-contamination and minimize airborne levels in the work area. Local air handlers of 1,000 cfm HEPA filtered exhausters or HEPA vacuums will supplement control of airborne. Work areas will be monitored with Continuous Alarm Monitors (CAMs) for site emergency notification to verify the effectiveness of these controls.

Exterior building modifications include extending airlocks for worker access, contamination control and improved egress routes. The exhaust system modification will relocate the electrical power supply and control panel outside of the facility to reduce electrical hazards to the workers during equipment removal. The 6,600 cfm supply fan with cooling and heating equipment has been deactivated. Since the supply fan will not be required for decommissioning work, a portable heat pump unit is planned to provide a controlled atmosphere of the work environment by heating or cooling the air being pulled into the negative pressure work areas.

K2.0 AIRBORNE SOURCE INFORMATION

The primary concern is for radiological contamination throughout the building from past fissile concentration operations. The radiological composition is alpha contamination made up of plutonium and americium. This type of contamination is mobile and hard to detect with radiological surveys due to weak radiation energies. Although stored hazardous inventories have been removed from the facility, any residual materials will require monitoring of the ambient site and worker conditions per the Site-Specific Health and Safety Plan in Appendix C. The current hazardous material source information is based on previous facility decontamination.

The radiological contamination consists of plutonium and americium which is primarily within the process piping and vessels. Process knowledge indicates that some contamination has spread throughout the facility. Contamination in routinely accessible areas has been removed or fixed in-place. Other areas have either loose surface contamination or contamination under failed paint or fixatives which must be removed using controlled methods.

K2.1 Facility Inventory

Safety Analysis, Appendix H, Table H-1 documents the extent of radiological contamination and hazardous substances. The isotopic composition of contamination is shown in Table H-2. The basis for these analyses is the 1990 characterizations of radiological (WHC 1990a) and chemical hazards (WHC 1990b).

Air samples, taken in 1994, upstream of the 233-SA HEPA filters, indicated no measurable air contamination during a three-week test of the 9,000 ft^3/m airflow from the Process Hood. Based on these results, the exhaust stack was downgraded to a minor stack[1] (EPA 1994). In addition to tests on the exhaust stack, calculations of normal emissions of radionuclides from the 233-SA building stacks were performed using the CAP88PC software package, Appendix H. The results show that for an unmitigated release (i.e., no HEPA filtration), the calculated dose to the public is below the criteria for a minor stack.

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[1]A "minor stack" under 40 CFR 61.93 does not have the potential to discharge radionuclides to the air in excess of 0.1 mrem/yr effective dose to the public and does not require continuous emission monitoring. Monitoring requirements for a "minor stack" are periodic confirmation measurements, as specified in 40 CFR 61.93.

K2.2 Effluent Description

The 233-SA Exhaust Filter Building was constructed after the 1963 fire to handle the 233-S exhaust ventilation. 233-SA is located at the northeast corner of the 233-S Facility. The filter building contains two parallel filter banks. Each bank has a series of double high-efficiency particulate air (HEPA) filter banks with its own exhaust fan. 25 ft high metal stack. sampling and monitoring equipment. The fans and stacks are located to the north of the building and are designated as 296-S-7 East and 296-S-7 West. Each stack has a record sampler required for confirmatory measurements. These units are located inside the 233-SA building with differential pressure gauges for the HEPA banks and a CAM for site emergency notification.

The 233-SA ventilation system draws air from both the process and non-process areas within the 233-S building per Figure K.1. When working outside of the facility, air flow will be controlled using the PTRAEU which has a 15 ft high, 24 in. diameter stack. It is equipped with a record sampler required for confirmatory measurements and a site emergency notification CAM, which provides both record sampling and radiation alarm.

K2.3 Stack Emissions

As shown below, the low annual stack emissions for the previous years show a downward trend for annual releases due to minor cleaning of the facility. In that, decontamination and characterization work was performed in 1994 and 1995 with no impact to emissions.

YEAR	ALPHA		BETA		Stack Annual Vol.
	Annual Ci	uCi/ml	Annual Ci	uCi/ml	Liters
1990	1.4E-06	1.1E-14	ND	-1.2E-15	1.3E+11
1991	2.5E-06	2.0E-14	7.3E-07	5.7E-15	1.3E+11
1992	1.3E-06	7.1E-15	ND	-4.9E-15	1.3E+11
1993	1.1E-06	8.2E-15	ND	-2.1E-15	1.3E+11
1994	1.4E-06	1.0E-14	ND	ND	1.4E+11
1995	5.6E-07	--	2.9E-07	--	1.4E+11

Note: ND is nondetectable and the source of data is WHC-EP-0527 and DOE/RL-96-37.

Figure K-1. 233-S Air Flow Configuration

(Insert graphics No. E9702090.1 latest rev)

K2.4 Stack Emissions Control

The primary emission control is HEPA filter treatment. Testing of HEPA filters will assure that the penetration test of the filter media , frame, and gasket shall be not greater than 0.03% of upstream aerosol concentration. This is based on the *Code on Nuclear Air and Gas Treatment*, ASME AG-1-1994. Additional control devices are the engineered barriers of airlocks, greenhouses, and glove bags with contamination work methods of misting and fixation of removable contamination.

K2.5 BEST AVAILABLE RADIONUCLIDE CONTROL TECHNOLOGY

The 233-S Facility decommissioning work has the potential to release radioactive emissions to the atmosphere. Implementing the best available radionuclide control technology (BARCT) for these radioactive emissions has been identified as an applicable or relevant, and appropriate requirement (ARAR). This identification of BARCT does not present a detailed evaluation of all the available radionuclide control technologies nor does it rank the benefits with respect to the environmental, economical, and energy impacts of each technology. However, the use of HEPA filters is generally accepted as BARCT for particulate radionuclide air emissions.

K3.0 MONITORING AND CONTROL

Stack emissions from either the 233-SA system or the PTRAEU will have continuous sampling with periodic confirmatory measurements as specified in 40 CFR 61.93. Annual samples will be archived at the Waste Sampling and Characterization Facility (WSCF) for supplemental measurements, if required. Effluent air samples will be handled according to BHI-SH-04 and archived to allow analysis of the historical

The minimum monitoring requirements for these control emission units are based on the level of the potential unabated dose that could be released to a maximally exposed offsite individual located at Ringold, approximately 26 kilometers away at the site boundary. According to the *National Emission Standards for Hazardous Air Pollutants* (40 CFR 61.93 [b]), if the potential offsite dose is below the threshold of 0.1 mrem/yr, then periodic confirmatory measurements (PCM) with prior EPA approval are required to verify low emissions. The calculated potential offsite dose for 233-S Facility D&D is below 0.1 mrem/yr, therefore, the monitoring requirements will consist of PCM. The PCM is operating the stack record sampler continuously for one week per quarter. After the week-long run, the sample filter is removed and submitted to a qualified laboratory for a total alpha, beta, and gamma analyses.

Although the Notice of Construction (DOE 1994) for this project is no longer valid due to implementation of the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*, the stack sampling and monitoring capabilities have been approved by the Washington State Department of Health for compliance with applicable requirements for normal operations (WDOH 1994).

In addition to work area CAMs, the stack CAM alarm will annunciate upon detection of radioactive air concentrations requiring emergency response. The alarm will initiate building response actions to initiate site emergency corrective actions.

Exhaust ventilation system will be operational when personnel are engaged in dismantlement activities involving radiological or other hazardous materials. Operation of the exhaust system will be maintained until the radioactive airborne concentrations and/or the potential for contamination release have/has been reduced to radiologically safe conditions as determined by Radiological and Design Engineering.

Contaminated structures will be decontaminated and stabilized prior to dismantlement. Since demolition of the structures may be a source of radioactive fugitive emissions, dust suppressants (e.g., water, fixatives) will be used and are considered BARCT for demolition. Exterior areas that require enclosures will be exhausted using portable exhausters with both CAM and record samplers.

The terrain immediately surrounding the 233-S Facility and the employee work areas in the support structures will be routinely surveyed according to BHI-SH-04 to verify radiological conditions. These areas will include office trailers, service trailers, parking lots, waste storage areas, equipment storage areas, and any other locations of concern. The investigative efforts will involve a predetermined program of radiation monitoring and contamination surveys, as well as surveillance for unsafe conditions. These efforts will be performed on a regular basis and the results documented and reviewed by project management and the safety organizations. Nonstandard findings will initiate corrective actions and mitigate study.

K4.0 REFERENCES

BHI-SH-04, *Radiological Control Work Instructions*, Bechtel Hanford Inc., Richland, Washington.

EPA, 1994, EPA Letter from Mr. Jerry Leitch to Mr. Steven H. Wisness, dated June 7, 1994, response to letter, *National Emission Standards for Hazardous Air Pollutants Federal Facility Compliance Agreement: Request for Redesignation of 296-S-7W Stack*, dated May 25, 1994.

DOE, 1994, *Radioacive Air Emissions Program Notice of Construction for the Decommissioning of the 233-S Plutonium Concentration Facility Complex*, DOE/RL-94-107 Rev. 1.0, United States Department of Energy, P.O. Box 550, Richland, Washington.

WDOH, 1994, letter No. AIR-94-1214, from Mr. Allen Conklin to Mr. James E. Rasmussen, dated December 15, 1994.

WHC, 1990a. *Radiological Characterization of the 233-S Facility*, WHC-SD-CP-TI-163, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

WHC, 1990b, *233-S Facility Potential Chemical Hazards*, WHC-SD-DD-TI-056, Rev. 0, Westinghouse Company, Richland, Washington.